ABSTRACT OF THE DISCLOSURE

Program descriptions (1) which define a plurality of devices by employing a program language capable of describing parallel operations are input, the input program descriptions are converted into an intermediate expression (S2), parameters which satisfy a real-time restriction are generated for the intermediate expression (S3), and circuit descriptions which are based on a hardware description language are synthesized on the basis of the generated parameters (S4). The intermediate expression is a concurrent control flow flag, a temporal automaton having a concurrent parameter, or the like. Parametric model checking is performed for the parameter generation. The program descriptions define the devices by using a "run" method, and define the clock synchronizations of the devices by using barrier synchronizations. Thus, a bus system meeting the real-time restriction can be designed.